

SEQUENCE LISTING**SEQ ID NO: 1**

Amino acid sequence of the Signal Peptide ER:

5

MKTNLFLFLIFSLLLLSLSSAEF

SEQ ID NO: 210 Amino acid sequence of the Vacuolar targeting signal from Tobacco
chitinase A:

DLLVDTM

15

SEQ ID NO: 3

Nucleic acid sequence of the Forward primer:

cagaattcgcccgcccctgca

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SEQ ID NO: 4

Nucleic acid sequence of the Reverse primer:

ctcagatcttggcgatgccaca

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SEQ ID NO: 5

Nucleic acid sequence of the forward primer from the 35S promoter:

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ctcagaagaccagagggt

SEQ ID NO: 6

Nucleic acid sequence of the backward primer from the terminator:

5 caaagcggccatcgtgc

SEQ ID NO: 7

10 Nucleic acid sequence of the human GCD cDNA used for the
constructs of the invention

gcccggcc ctgcatccct aaaagcttcg gctacagctc ggtggtgtgt
gtctgcaatg ccacatactg tgactccttt gacccccga cctttcctgc ccttgggtacc ttcagccgct
atgagagtac acgcagtggg cgacggatgg agctgagtat ggggcccac caggctaata acacggggcac
15 aggcctgcta ctgaccctgc agccagaaca gaagttccag aaagtgaagg gatttggagg ggccatgaca
gatgctgctg ctctcaacat ccttgccctg tcaccccctg cccaaaattt gctacttaaa tcgtacttct
ctgaagaagg aatcggatat aacatcatcc ggggtacccat ggccagctgt gacttctcca tccgcaccta
cacctatgca gacaccctg atgatttcca gttgcacaac ttcagcctcc cagaggaaga taccaagctc
aagatacccc tgattcaccg agccctgcag ttggcccagc gtcccgtttc actccttgcc agcccctgga
20 catcaccac ttggctcaag accaatggag cggatgaatgg gaaggggtca ctcaaggagac agcccggaga
catctaccac cagacctggg ccagatactt tgtgaagttc ctggatgcct atgctgagca caagttacag
ttctgggcag tgacagctga aaatgagcct tctgctgggc tgttgagtgg atacccttc cagtgcctgg
gcttcacccc tgaacatcag cgagacttca ttgccgtga cctaggtcct accctcgcca acagtactca
ccacaatgta cgcctactca tgctggatga ccaacgcttg ctgctgcccc actgggcaaa ggtggtactg
25 acagaccag aagcagctaa atatgttcat ggcattgctg tacattggtg cctggacttt ctggctccag
ccaaagccac cctaggggag acacaccgcc tgttcccaa caccatgctc tttgcctcag aggcctgtgt
gggctccaag ttctgggagc agagtgtgcg gctaggctcc tgggatcgag ggatgcagta cagccacagc
atcatcacga acctctgta ccatgtggtc ggctggaccg actggaacct tgccctgaac cccgaaggag
gaccaattg ggtgcgtaac tttgtcgaca gtcccatcat ttagacatc accaaggaca cgttttacaa
30 acagcccatg ttctaccacc ttggccactt cagcaagttc attcctgagg gctcccagag agtggggctg
gttgccagtc agaagaacga cctggacgca gtggcactga tgcacccga tggctctgct gttgtggtcg

tgctaaaccg ctctctaag gatgtgcctc ttaccatcaa ggatcctgct gtgggcttcc tggagacaat
ctcacctggc tactccattc acacctacct gtggcatcgc cag

5 **SEQ ID NO: 8**

Glucocerebrosidase amino acid sequence

A R P C I P K S F G Y S S V V
C V C N A T Y C D S F D P P T F P A L G T F S
10 R Y E S T R S G R R M E L S M G P I Q A N H T
G T G L L L T L Q P E Q K F Q K V K G F G G A
M T D A A A L N I L A L S P P A Q N L L L K S
Y F S E E G V R L L M L N D Q R L L L P H W A K V
V L T D P E A A K Y V H G I A V H W Y L D F L A P A K A
15 T L G E T H R L F P N T M L F A S E A C V G S K F W E
Q S V R L G S W D R G M Q Y S H S I I T N L L Y H V V
G W T D W N L A L N P E G G P N W V R N F V D S P I I
V D I T K D T F Y K Q P M F Y H L G H F S K F I P E G S
Q R V G L V A S Q K N D L D A V A L M H P D G S A V V
20 V V L N R S S K D V P L T I K D P A V G F L E T I S P G
Y S I H T Y L W H R Q

SEQ ID NO: 9

25 ³⁵S Promoter nucleic acid sequence

Ttttcacaaagggtaatatcgggaaacctcctcggattccattgcccagctatctgtcattcatcg
aaaggacagtagaaaaggaaggtggctcctacaaatgccatcattgcgataaaggaaaggctatcgttca
agatgcctctaccgacagtgggtcccaaagatggacccccacccacgaggaacatcgtggaaaaagaaga
30 cgttccaaccacgtcttcaaagcaagtggattgatgtgatatctccactgacgtaagggatgacgcacaat
cccactatccttcgcaagacccttcctctatataaggaagttcatttcatttggagaggac

SEQ ID NO: 10

Nucleic acid sequence encoding the ER signal peptide

5 atgaagactaatcttttctctttctcatcttttcacttctc ctatcattatcctcggccgaattc

SEQ ID NO: 11

Nucleic acid sequence encoding the vacuolar targeting sequence

10 gatcttttagtcgatactatg

SEQ ID NO: 12

15 Nucleic acid sequence of the terminator

taatttcatgatctgtttgtgtattcccttgcaatgcagggcctagggctatgaAtaaagttaatgt
gtgaatgtgtgaatgtgtgattgtgacctgaagggtacacgactataatcgtttataataaacaagactttg
tcccaaaaacccccccccn gcaga

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SEQ ID NO: 13

Nucleic acid sequence of the expression cassette of the invention

25 tttcacaaagggtaatatcgggaaacctcctcggattccattgccagctatctgtcacttcatcg
aaaggacagtagaaaaggaaggtggctcctacaaatgccatcattgcgataaaggaaaggctatcgttca
agatgcctctaccgacagtgggtcccaaagatggacccccacccacgaggaacatcgtggaaaaagaaga
cgttccaaccacgtcttcaaagcaagtggattgatgtgatatctccactgacgtaagggtacgcacaaat
30 cccactatccttcgcaagacccttcctctatataaggaagttcatttcatttgagaggacaggcttcttgag
atccttcaacaattaccaacaacaacaacaacaacattacaattactatttacaattacagtcga
gggatccaaggagatataacaatgaagactaatcttttctctttctcatcttttcacttctcctatcattatcc

tcggccgaattcgcccccccctgcatccctaaaagcttcggctacagctcgggtggtgtgtgtctgcaatgcc
acatactgtgactcctttgaccccccgacctttcctgcccttggtaccttcagccgctatgagagtacacgca
gtggcgacggatggagctgagtatggggcccatccaggctaatacacacgggcacaggcctgctactgac
cctgcagccagaacagaagttccagaaagtgaagggtattggaggggcatgacagatgctgctgctctc
5 aacatccttgccctgtcacccccctgccccaaaatttgctacttaaatcgTacttctctgaagaaggaatcgga
tataacatcatccgggtacccatggccagctgtgacttctccatccgcacctacacctatgcagacaccct
gatgatttccagttgcacaacttcagcctcccagaggaagataccaagctcaagatacccctgattcaccg
agccctgcagttggcccagcgtcccgtttcactccttgccagcccctggacatcacccacttggctcaagac
caatggagcgggtgaatgggaaggggtcactcaagggaacagcccggagacatctaccaccagacctgggc
10 cagatactttgtgaagttcctggatgcctatgctgagcacaagttacagttctgggcagtgacagctgaaaa
tgagccttctgctgggctgttgagtggataccccttcagtgctgggcttcaccctgaacatcagcgagac
ttcattgcccgtgacctaggtcctaccctcgccaacagtactcaccacaatgtccgcctactcatgctggatg
accaacgcttgctgctgccccactgggcaaagggtgtactgacagaccagaagcagctaaatatgttcat
ggcattgctgtacattgggtacctggactttctggctccagccaaagccaccctaggggagacacaccgcct
15 gttccccaacacccatgctctttgcctcagaggcctgtgtgggctccaagttctgggagcagagtgtgaggta
ggctcctgggatcgagggatgcagtacagccacagcatcatcacgaacctcctgtaccatgtgggtcggtg
gaccgactggaaccttgccctgaaccccgaggaggacccaattgggtgcgtaactttgtcgacagtcca
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tcattcctgagggtcccagagagtggggctggttgccagtcagaagaacgacctggacgcagtggcactg
20 atgcatcccgatggctctgctgttggtcgtgctaaaccgctcctctaaggatgtgcctcttaccatcaagg
atcctgctgtgggcttcctggagacaatctcacctggctactccattcacacctacctgtggcatcgccaag
atcttttagtcgatactatgtaatttcatgatctgtttgttgattcccttgcaatgcagggcctagggctatga
Ataaagttaatgtgtgaatgtgtgaatgtgtgattgtgacctgaagggtacgactataatcgtttataata
aacaagactttgtcccaaaaacccccccccccngcaga

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SEQ ID NO: 14

Amino acid sequence of the recombinant protein of the invention

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M K T N L F L F L I F S L L L S L S S A E F A R P C
I P K S F G Y S S V V C V C N A T Y C D S F D P P T F P

A L G T F S R Y E S T R S G R R M E L S M G P I Q A N
H T G T G L L L T L Q P E Q K F Q K V K G F G G A M T
D A A A L N I L A L S P P A Q N L L L K S Y F S E E G I G
Y N I I R V P M A S C D F S I R T Y T Y A D T P D D F Q
5 L H N F S L P E E D T K L K I P L I H R A L Q L A Q R P
V S L L A S P W T S P T W L K T N G A V N G K G S L K G
Q P G D I Y H Q T W A R Y F V K F L D A Y A E H K L Q
F W A V T A E N E P S A G L L S G Y P F Q C L G F T P E
H Q R D F I A R D L G P T L A N S T H H N V R L L M L
10 D D Q R L L L P H W A K V V L T D P E A A K Y V H G I
A V H W Y L D F L A P A K A T L G E T H R L F P N T M
L F A S E A C V G S K F W E Q S V R L G S W D R G M Q
Y S H S I I T N L L Y H V V G W T D W N L A L N P E G G
P N W V R N F V D S P I I V D I T K D T F Y K Q P M F Y
15 H L G H F S K F I P E G S Q R V G L V A S Q K N D L D
A V A L M H P D G S A V V V V L N R S S K D V P L T I K
D P A V G F L E T I S P G Y S I H T Y L W H R Q D L L V
D T M

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Other Embodiments

It is to be understood that while the invention has been described in conjunction with the detailed description thereof, the foregoing description is intended to illustrate and not limit the scope of the invention, which is defined by the scope of the appended claims. Other aspects, advantages, and modifications are within the scope of the following claims.

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